

Appendix I: City of Laurel, MD Flood Hazard Addendum

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Section 1 Executive Summary

On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000, also known as DMA2K. Among its other features, DMA2K established a requirement that in order to remain eligible for Federal disaster assistance and grant funds, local and State governments must develop and adopt Hazard Mitigation Plans (HMPs). On February 26, 2002, the Federal Emergency Management Agency published an Interim Final Rule (IFR) that set forth the guidance and regulations under which such plans are supposed to be developed. The IFR provides detailed descriptions of both the planning process that States and localities are required to observe, and the contents of the plan that emerges. The Prince George's County and & the City of Laurel Hazard Mitigation Plan Update was approved by the State and the Federal Emergency Management Agency (FEMA) in 2017, and subsequently adopted by the City of Laurel, MD.

Hazard mitigation is defined as any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events. This City of Laurel, MD Flood Hazard Addendum is a comprehensive re-evaluation of the flood hazard threat to the City of Laurel, including the hazard profile, risk assessment, mitigation goals, strategies, and mitigation priorities.

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1.1 Organization of the Plan

The City of Laurel, MD Flood Hazard Addendum is organized to parallel the structure provided in the Interim Final Rule [IFR]. The Addendum has six (6) sections.

| | |
|------------------|---|
| Section 1 | Executive Summary |
| Section 2 | Background |
| Section 3 | Planning Process |
| Section 4 | Flood Hazard Identification and Risk Assessment |
| Section 5 | Flood Mitigation Goals, Objectives, Strategies and Actions |
| Section 6 | Flood Hazard Addendum Monitoring, Evaluation and Maintenance |

1.2 Background

Since the development of the existing Prince George's County and City of Laurel Hazard Mitigation Plan in 2010, the City of Laurel has become more involved regionally in the identification and development of mitigation strategies specific to the flooding hazards within the community. Action plans such as the Patuxent River Policy Plan adopted in 2015, have identified mitigation and restoration strategies to assist local jurisdictions surrounding the Patuxent River to reduce flooding risks. Though the existing plan does include a review of flood hazards within the community, the plan

does not focus specifically on flood mitigation and resilience building strategies. Development of this Flood Hazard Addendum to the existing plan will allow the City of Laurel to add value to the existing plan and retain agility in addressing the mitigation needs of the community.

1.3 Hazard and Risks

1.3.1 Flood Hazard

Section 4 of this Addendum includes a detailed description of the City of Laurel’s risk from the flood hazard, risk assessments for the City and more detailed assessments for City assets.

The flood hazard profile in Section 4 includes:

- Description of the Hazard
- Location and Extent of the Hazard
- Severity of the Hazard
- Impact on Life and Property
- Occurrences of the Hazard

1.3.2 Risks

Risk is a numerical calculation of potential future damages. Although all of the hazard events identified in the Prince George’s County & the City of Laurel Hazard Mitigation Plan Update have some potential to affect the City, flooding is a significant threat to life and property within the City of Laurel. Section 4 includes details about calculation methodologies and results of the risk assessment.

1.4 Summary of Goals, Objectives, Strategies and Actions

Section 5 of this Plan describes the City of Laurel’s priorities for mitigation actions. This section prioritizes the actions, describes the funding required, identifies potential sources of funding, designates the responsible coordinating entity, gives anticipated year of completion, and analyzes benefits. The section also includes the City’s flood hazard mitigation goals, objectives, and strategies.

1. Seek Federal and State grants to fund mitigation activities.
2. Encourage and facilitate the development or updating of General Plans, Drainage Plans, Land and Zoning, Building Construction, and Floodplain Management Ordinances to limit development in flood hazard areas.

1.5 Action Items

The Flood Hazard Addendum outlines the City’s current priorities for specific activities to achieve the four goals listed above. Section 5 gives details for the City’s approach to addressing the flood hazard profiled in Section 4 and reducing the risk to the City of Laurel.

1.6 The Planning Process

Section 3 provides details about the process that was used to develop this Flood Hazard Addendum. The process closely followed the guidance in the FEMA “G318” planning guidance, resulting in a five-stage process for the development of this addendum.

Step 1 Organize resources & create outreach strategy includes identification of a Flood Prevention Planning Committee (FPPC) that was responsible for most aspects of Plan development. This committee included stakeholders from the City of Laurel, which were informed of the planning decisions and provided interim versions of the Plan for review and comment. The Mayor and City Council of Laurel is the approving authority for the Addendum.

Step 2 Identify community assets, analyze hazards, and assess risks was completed by the FPPC, and is included as Section 4 of the Plan.

Step 3 Develop a flood hazard plan is described in Section 3 (Planning Process). The section includes details about who was involved, the processes that were used, and the products that were developed.

Step 4 Implement the plan and monitor progress is described in the section 5, which includes details about who is responsible for implementation of specific strategies and actions; and in Section 6, which describes long-term implementation through periodic updates and reviews.

Step 5 Create a safe and resilient community will be an ongoing effort accomplished through the implementation of the mitigation strategies and actions discussed in Section 5 of this plan.

1.7 Implementation Process

The implementation process is described as part of the specific actions in the Mitigation Strategy section (Section 5).

1.8 Monitoring and Updating Processes

Section 6 describes the schedule and procedures for ensuring that the Flood Hazard Addendum stays current. The section identifies when the Addendum must be updated, who is responsible for monitoring the Addendum, and ensuring that the update procedures are implemented. The section also provides a combination of cyclical dates (oriented toward FEMA requirements) and triggering events that will initiate amendments and updates to the Addendum. The City Administrator’s Office is responsible for monitoring the Addendum and initiating the cyclical update process.

Section 2 Background

2.1 Introduction

In 2005 Prince George's County Department of the Environment and the Office of Homeland Security Office of Emergency Management in partnership with the City of Laurel's Office of Emergency Services prepared its original Hazard Mitigation Plan (HMP) to be better equipped for disasters before they occur. It was also developed to objectively evaluate the hazards that occur in the County and prioritize the actions needed to provide a safe place to live. The Plan was developed to satisfy the Disaster Mitigation Act of 2000 (DMA 2000) which required local governments to develop a HMP that complied with specific regulations. If a Plan was not developed by the specified deadline, local governments would no longer be eligible for future HMGP funding. The Plan was developed and approved by the Maryland Emergency Management Agency (MEMA) and FEMA in 2005.

Updates to the 2005 Prince George's County Hazard Mitigation Plan were made in 2010 and 2017. The Prince George's County and City of Laurel Hazard Mitigation Plan 2010 Update was approved by FEMA Region III on February 8, 2012 and the Prince George's County - City of Laurel Multi-Jurisdictional Hazard Mitigation Plan 2017 Update will include this City of Laurel, MD Flood Hazard Addendum when submitted for review/approval by MEMA and FEMA.

What follows in Section 2 is a description of the "scope of the Flood Hazard Addendum" which addresses why the Plan was originally prepared and is now being updated, maps of the planning area and background about the City of Laurel.

2.1.1 Scope of the Flood Hazard Addendum

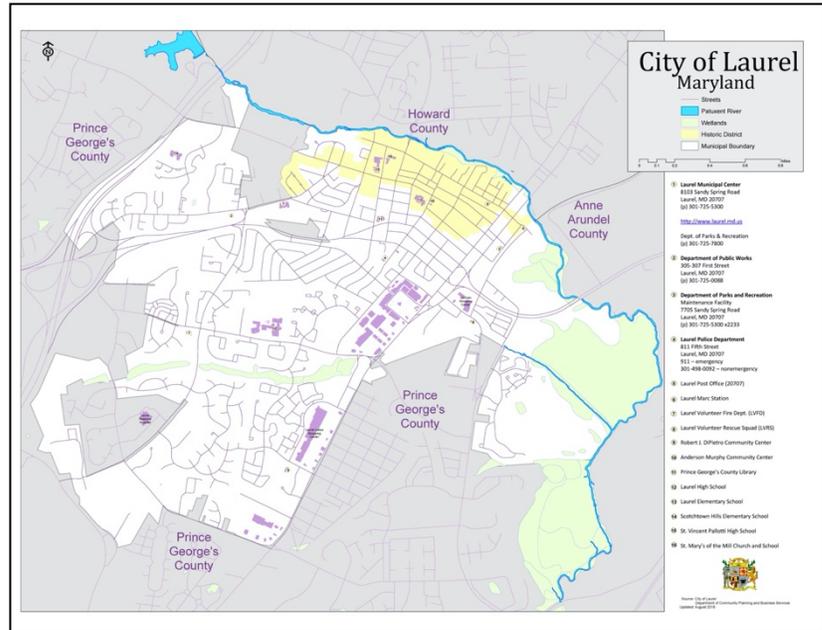
The original Prince George's County Hazard Mitigation Plan was a concerted effort to be a useful tool for all community stakeholders by increasing public awareness about local hazards and risks and providing information about options and resources available to reduce those risks. Educating the public about potential hazards will help each jurisdiction protect itself against the effects of future hazards, and will enable informed decision-making regarding where to live, purchase property, or locate business. The original Plan was updated in 2010 and has been utilized to better articulate accurate needs for the community based on a process that involves all stakeholders including the general public, government, business and industry.

The Prince George's County and City of Laurel Hazard Mitigation Plan 2010 Update included re-evaluating the original hazards, the risk assessment, mitigation goals, strategies, and mitigation priorities. As part of the 2017 update process, all sections of the Plan were re-assessed to identify changes and updates that may have occurred since the 2010 version or as a result of any disaster declarations since that time.

Though the 2017 plan update does include a review of flood hazards within the community, the plan does not focus specifically on flood mitigation and resilience building strategies. Development of this Flood Hazard Addendum to the existing plan will allow the City of Laurel to add value to the existing plan and retain agility in addressing the mitigation needs of the community.

2.2 Location

The City of Laurel is located midway between the Baltimore and Washington Metropolitan Areas. As these two metropolitan areas have continued to merge, their impact on the City of Laurel has dramatically increased. Located within the northwest corner of Prince George's County, Laurel is also heavily impacted by several other jurisdictions. To the north and northeast are Howard and Anne Arundel Counties respectively with Montgomery County located approximately a mile to the west. Forming a natural boundary to the north is the Patuxent River, which serves as the dividing line between the City of Laurel and the two adjoining counties.



2.3 Community Assets

The below community facilities/assets are vital to the continuity, sustainability, and resilience of the City of Laurel.

City Hall Municipal Center – This facility houses the main City government offices to include the Mayor, City Council, City Administrator, Deputy City Administrator, Emergency Manager, Budget, Finance and Human Resource Office, Fire Marshal & Permit Services Office, Parks & Recreation Office, Public Information & Communications Office, Economic & Community Development Office & Information Technology Office and the U.S. Passport Office is within this facility. The City's Emergency Operations Center (EOC) is located within this facility and this facility serves as a backup site for the Laurel Police Department's dispatchers/communications operations.

Laurel Police Department – This facility houses the City's full-service Police Department with a wide variety of police functions, to include prisoner holding cells, dispatch communications office, administrative offices, patrol offices, investigation offices, and special operations offices. This building houses a conference hall which is open to the public and is used to host special events & functions. This facility is used as a storage site for the LPD's vehicles, trucks, & specialty vehicles used for both normal & emergency operations. This facility houses several City COOP alternate work locations.

Laurel Volunteer Fire Department – This facility is a two-level building with 4 drive-through bays that houses the entire volunteer fire department for the City of Laurel. The upper level of the building is dedicated to the operations branch of the department, while the lower level houses the administrative branch. The facility contains offices, a gym, a kitchen, meeting rooms and bunk rooms for male and female fire fighters.

Laurel Volunteer Rescue Squad – This facility houses a private, nonprofit corporation that provides medical, rescue, and fire services to the Greater Laurel area. The facility houses state of the art heavy rescue equipment, a rescue engine, fire engine, water rescue team gear/equipment, two rescue boats, two BLS ambulances, and support vehicles. The Laurel Volunteer Rescue Squad utilizes this facility and the contained equipment to respond to over 7,000 calls for help annually.

Department of Public Works – This facility consists of 3 major structures that houses the City's full-service Public Works Department. Additionally, this site is the storage facility for all the City's fleet of trucks. The City's Office of Emergency Management's emergency response trailers are stored at this facility. Building one houses the main full service DPW offices to include: administrative offices, transportation offices, DPW Emergency Operations Center, vehicle maintenance & repair operations, etc., building two is used to store equipment, materials, and supplies used by DPW to support a wide range of both normal & emergency operations, and building three is DPW's salt dome that stores road salt used during winter weather emergencies and events.

Department of Parks and Recreation Operations – This facility consists of 2 major structures that houses both the City's full-service Parks & Recreation operations division and a garage structure for the City's Mobile Command Unit (MCU) and its Rehab/Canteen Vehicle. Building one houses the main full service P&R offices to include: administrative offices, operational offices, emergency support functions office, equipment storage for both normal & emergency operations, etc. This building is used as one of P&R's designated COOP sites and building two houses the City's MCU emergency vehicle and Rehab/Canteen emergency vehicle used for local, county and regional emergency incidents and special events.

Laurel Armory – Anderson Murphy Community Center – This Parks & Recreation Department facility consists of a variety of both recreational and office spaces used to support both public and City employee recreational, health & wellness operations. This facility is used as one of the City's designated temporary emergency evacuation shelters during disasters or evacuation operations and this building is used as one of the P&R's designated COOP sites. This site is also the designated COOP site for the City's Emergency Relocation Group for COOP events.

Robert J. DiPietro Community Center – This Parks & Recreation Department facility consists of a variety of both recreational and office spaces used to support both public and City employee recreational, health & wellness operations. This facility is used as one of the City's designated temporary emergency evacuation shelters during disasters or evacuation operations. This building is used as one of the Parks & Recreation's designated COOP sites.

Public Schools – Laurel Elementary School, Scotchtown Hills Elementary School and Laurel High School are all located within the boundaries of the City of Laurel.

Section 3 Planning Process

The process used to develop the City of Laurel Flood Hazard Addendum was guided by a Flood Prevention Planning Committee. The process included committee members which carried out most of the planning duties, and a Stakeholders group, which was responsible for reviewing the document at key points and providing feedback.

3.1 Description of the Planning Process

3.1.1 How the Plan was Prepared and Updated

Section 3 provides details about the process that was used to develop this Flood Hazard Addendum. The process closely followed the guidance in the FEMA Local Mitigation Planning Handbook, resulting in a five-stage process for the development of this mitigation plan update.

- Step 1** Organize resources & create outreach strategy
- Step 2** Identify community assets, analyze hazards, and assess risks
- Step 3** Develop a flood hazard plan
- Step 4** Implement the plan and monitor progress
- Step 5** Create a safe and resilient community

3.1.2 Step 1 - Organize Resources

The City of Laurel used a standard organization to develop its Flood Hazard Addendum. The organization is comprised of the following planning members and stakeholders:

| Category | Government -City Employees | Public Representatives |
|---------------------------|-----------------------------------|-------------------------------|
| 1. Preventive | Stephen Allen, Sr - OEM | David McDonough - WSSC |
| 2. Property Protection | Russ Hamill - Chief LPD | Vic Whipple |
| 3. Natural Resources | Bill Bailey - P&R | Brian Coyle |
| 4. Emergency Services | Richard Blankenship - FM&PS | Marty Flemion |
| 5. Structural Projects | Melanie Wieringa - CBO | Jim Cross |
| 6. Public Information | Audrey Barnes - PIO | Michael McLaughlin |
| 7. Comprehensive Planning | Christian Pully - E&CD | Frank McColm |

The City of Laurel Flood Hazard Addendum was funded through a grant from FEMA. In the planning process, the City of Laurel procured the services of Rostan Solutions, LLC, a professional planning consultant, to facilitate the process.

3.1.2.1 Flood Prevention Planning Committee Meeting Schedule

The Flood Prevention Planning Committee and the consultant hired by the City were responsible for completing the Flood Hazard Addendum including all of its component sections. The committee met three times during the planning process.

Committee Meeting 1 September 12, 2019

Flood Prevention Planning Committee members reviewed flood elevation GIS map data and known flood event locations to assess the flood hazard within the City of Laurel as well as the flooding problems that affect the City. (See Attachment 1 for completed map activity and Attachment 2 for PowerPoint Presentation)

Committee Meeting 2 November 14, 2019

Flood Prevention Planning Committee members set goals to be achieved through flood mitigation planning and reviewed possible mitigation activities that could be implemented in the City of Laurel to achieve those goals. (See Attachment 3 for sign in sheet and prioritization activity and Attachment 4 for PowerPoint Presentation)

Committee Meeting 3 January 15, 2020

Flood Prevention Planning Committee members participated in a roundtable session to make revisions and structural prioritization edits to the mitigation actions and drafted an action plan for the City. (See Attachment 5 for sign in sheet and actions activity)

Flood Prevention Planning Committee members also had the opportunity to provide input and feedback on the content and process of the Flood Hazard Addendum during these meetings.

3.1.3 Step 2 - Assess Flood Risks

In accordance with general mitigation planning practice, as well as the process FEMA established in its Planning “How-To” series of guides, the risk assessment forms the basis for the Flood Hazard Addendum by quantifying and rationalizing information about how flood hazards affect the City of Laurel. The processes used to complete the risk assessment, and the results of these activities, are described in detail in Sections 4 and 5 of this addendum. The assessment determined several aspects of the risks of flood hazards faced by the City:

- The flood hazards that are most likely to affect the City
- How often flood hazards are expected to impact the City
- The expected severity of the flood hazards
- What areas of the City of Laurel are likely to be affected by flood hazards
- How City assets, operations, people and infrastructure may be impacted by flood hazards
- How private and commercial assets, operations, and infrastructure may be impacted by flood hazards
- The expected future losses if the flood risk is not mitigated

3.1.4 Step 3 - Identify and Scope Potential Flood Hazard Mitigation Projects

As part of the planning initiative potential flood hazard mitigation projects were identified and scoped in accordance with the requirements of the program. The Flood Prevention Planning Committee was provided a list of potential mitigation projects that were identified in the 2010 Hazard Mitigation Plan Update and reviewed those potential projects to identify activities most likely to provide flood protection measures to the City of Laurel. These projects are included in Section 5 of this Flood Hazard Addendum.

3.1.5 Step 4 - Develop the Flood Hazard Addendum

The process employed to develop this Addendum was based on the FEMA Local Mitigation Planning Handbook which outlines hazard mitigation planning procedures in accordance with the Interim Final Rule section of the 44 CFR.

3.1.6 Step 5 - Implement the Plan and Monitor Progress

Once approved by FEMA and formally adopted by Prince George's County and the City of Laurel, this Addendum must be updated every five years in order for the County/City to maintain its eligibility for various FEMA grant programs and funds. During this five-year period, the Addendum is periodically reviewed to ensure compliance with FEMA and the State of Maryland requirements for Addendum maintenance (See Section 6 – Plan Monitoring and Maintenance for more details). The City will implement specific actions to achieve the goals and objectives described in Section 5 - Mitigation Strategy. In addition to listing the mitigation strategies and actions the City is pursuing, the section describes the progress the City has made towards reaching the individual goals since the 2017 Plan Update was adopted.

The City Administrator's Office governs the City and has the final decision on what projects are worked on, and how and when they will be accomplished. The action items fall under their jurisdiction and they will delegate the tasks of the action items. Therefore the City Administrator will coordinate with the Emergency Manager and Lead Manager of each mitigation item to accomplish the goals and action items. The Lead Manager will follow any current procedures the City has while completing the action items.

3.2 How the Public was Involved

The Flood Prevention Planning Committee met a total of three times during development of this Flood Hazard Addendum. Following the third committee meeting, a public meeting was held to solicit feedback from the public and allow attendees to provide comment on the flood risk and potential flood mitigation activities included in the Flood Hazard Addendum. For this public meeting, a press release was prepared informing the public about the Flood Hazard Addendum and urged the public to attend this meeting. Attachment 4 includes the PowerPoint presentation that was shown to the individuals of the public that attended the meeting. Attachment 6 includes photos and sign in sheet from the public meeting.

- Public meeting 1 January 15, 2020

Section 4 Flood Hazard Identification and Risk Assessment

This section includes a detailed description of the City of Laurel's risk from the flood hazard, risk assessments for the City and more detailed assessments for City assets. As part of the development process for this addendum, the FPPC met at the onset of planning where members identified on a map the specific areas within the City of Laurel that are vulnerable to the threat of the flood hazard and have experienced flooding in the past. The data collected from committee members at this meeting was incorporated into the identification and risk assessment of the flood hazard within the City.

4.1 Description of the Flood Hazard

A major natural feature within the City is the Patuxent River, which runs along the northern City boundary. Connected with the river are three major tributaries, Walker, Crow and Bear Branches. Walker Branch traverses the northwest portion of the City and drains into the Patuxent River west of Main Street. Bear Branch originates west of Sweitzer Lane and feeds into Laurel Lakes, and eventually into Crow's Branch within the Greens of Patuxent. A large portion of those areas immediately adjacent to the tributaries is a steep slope. Water flowing through the Patuxent River is impounded between Brighton Dam in Montgomery County and the T. Howard Duckett Dam just west of Interstate 95. Drinking water for the City is pumped from the Rocky Gorge Reservoir to the Patuxent Water Filtration Plant.

A drainage basin for the area extends along a ridgeline west of the City and runs easterly to the Patuxent River near the Baltimore-Washington Parkway. The system includes direct drainage into the Patuxent River as well as into the three major tributaries. Natural drainage for the City is generally poor owing in large part to the relative flatness of the topography.

In 1980 the Maryland General Assembly enacted the Patuxent River Watershed Act. The purpose of this Act was to create a coordinated land management strategy for controlling non-point pollution within the Patuxent River Watershed. The State and all seven counties within the watershed subsequently adopted a policy plan.

As part of this effort, the City is a member of Prince George's County's Patuxent River Watershed Advisory Committee. As Laurel becomes progressively more developed and as more of the ground surface is covered with impervious materials, the amount of storm water runoff is continually increasing. Without effective countermeasures, increased pollution to the river occurs. Consequences of this pollution include silt build-up in riverbeds, brownish water from sediment runoff and debris and litter being washed into the water and along the banks.

4.1.1 Summary of NFIP Participation

The National Flood Insurance Program (NFIP) enables property owners in participating communities to purchase Federally-backed insurance for flood losses, which is designed to provide an alternative to disaster assistance so that the high costs associated with the repair of flood damages is reduced. As a participating community through the NFIP, the City of Laurel has adopted and enforces local floodplain management regulations that meet or exceed the minimum Federal NFIP floodplain management regulations. The City's participation and utilization is further discussed in the Prince George's County & the City of Laurel Hazard Mitigation Plan Update Section 4.5.1, and is summarized through the three tables below:

City of Laurel NFIP Participation

| Jurisdiction | Initial FHBM Identified | Initial FIRM Identified | Current Effective Map Date |
|----------------|-------------------------|-------------------------|----------------------------|
| City of Laurel | 9 Aug 1974 | 1 Nov 1978 | 16 Sep 2016 |

City of Laurel NFIP Policies in Force

| Jurisdiction | Policies in Force | Insurance In-Force Whole | Written Premium In-Force |
|----------------|-------------------|--------------------------|--------------------------|
| City of Laurel | 175 | 42,481,800 | 196,005 |

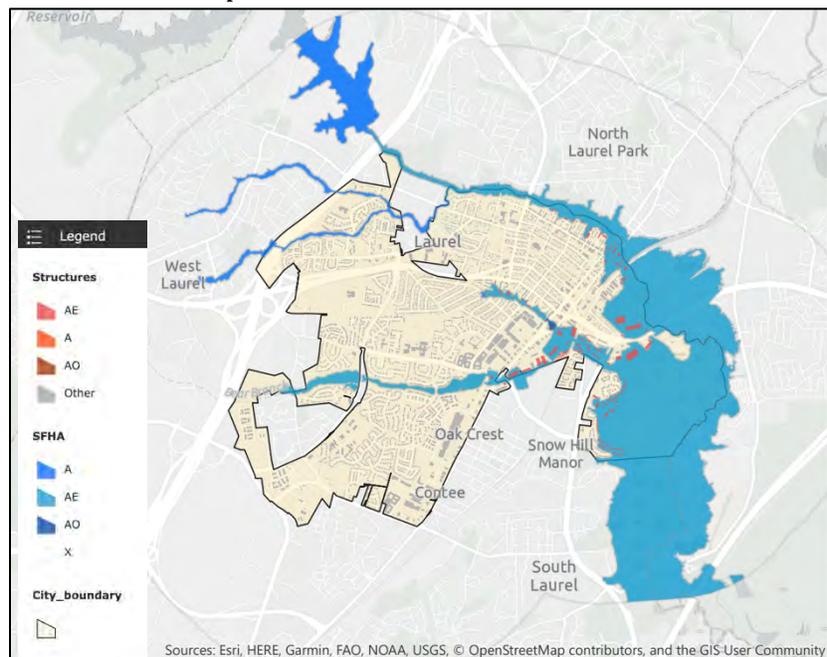
City of Laurel NFIP Claims as of December 2016

| Jurisdiction | Total Losses | Closed Losses | Open Losses | CWOP Losses | Total Payments |
|----------------|--------------|---------------|-------------|-------------|----------------|
| City of Laurel | 17 | 5 | 0 | 12 | \$99,870.88 |

4.2 Location and Extent of the Flood Hazard

Prince George’s County is bordered by the Patuxent River to the east and the Potomac River to the west. The City of Laurel is located in the northeast section of the County and borders the Patuxent River. The majority of tributaries, branches, and creeks in the area flow into either of these two rivers. The effective FEMA Flood Insurance Rate Maps (FIRM) for the City were updated September 16, 2016. They show one-percent annual chance floodplains associated with the rivers and streams in the Potomac and Patuxent watersheds. The FIRM identifies high flood hazard risk areas as part of the one-percent annual chance (100 year) floodplain, moderate risk areas as part of the 0.2-percent annual chance (500 year) floodplain, or minimal risk areas outside the 500-year floodplain. Using ESRI GIS tools, the following map was created to show the location of structures within the following zones:

- 7,623 properties in X zone
- 268 in AE zone
- 5 in A zone
- 3 in AO zone



Attachment 1 details seven (7) “hot-spot” areas of flood risk identified by the FPPC.

4.3 Severity of the Flood Hazard

Flood severity is measured in several ways, including frequency, depth, velocity, and duration, among others. For the City of Laurel, generally speaking the severity relates to how frequent floods occur. The City of Laurel has experienced several flood events that have caused damage since the 2010 mitigation plan update was adopted. The table below summarizes several that have occurred. Some of these flood instances are related to remnants of tropical storms and hurricanes that have also affected many other areas of the United States.

| Event Date | Description |
|----------------------|---|
| September 2010 | Remnants of Tropical Storm Nicole produced massive amounts of rain throughout Maryland. |
| August 2011 | Hurricane Irene did not make direct landfall, but due to the large size, hurricane conditions were felt inland. FEMA issued an Emergency declaration (FEMA-EM-3335-MD) for the incident beginning August 26, 2011. |
| September 2011 | The remnants of Tropical Storm Lee moved across Maryland, causing widespread flooding.7 Prince Georges County experienced around 24 inches of rainfall from this storm. FEMA issued a Major Disaster declaration (FEMA-DR-4038-MD) for the incident beginning September 6, 2011. |
| October 2012 | Hurricane Sandy makes landfall north of the state. However, due to the tremendous size of the storm, its effects were felt all over Maryland. Over a foot of rain fell in some spots along with very gusty winds. FEMA issued Emergency (FEMA-EM-3349-MD) and Major Disaster (FEMA-DR-4091-MD) declarations for Sandy beginning October 26, 2012. |
| April 30-May 5, 2014 | Flash flooding from a severe storm caused dangerously high Patuxent River levels and resulted in a necessary release of water from the T. Howard Duckett Dam. Flooding impacts were noted at structures throughout the City of Laurel. |
| September 2015 | Flash floods and riverine flooding occurred due to heavy rainfall. |
| October 2016 | While Hurricane Matthew did not make landfall in the state, the storm still brought rain and gusty winds to the city of Laurel due to its large size. |

4.3.1 Impact on Life and Property

There have been 19 floods recorded in the City of Laurel in the period from 1996 to 2019, with 2 of those events resulting in property damages of \$120,000. This count includes floods, and flash floods.

4.3.2 Occurrences of the Flood Hazard

According to the NOAA NCEI Storm Events Database, there have been 19 reported flood events in the City of Laurel since 1996. As demonstrated in the table below there was an average of \$6,316 in damages (all property damage with no reported agricultural damage), and no deaths or injuries reported to the database during this period.

| HIRA Hazards | Number of Events | Period of Record | Current Total Annual Damages | Annualized Deaths | Annualized Injuries | Annualized Events |
|-------------------|------------------|------------------|------------------------------|-------------------|---------------------|-------------------|
| Flash Flood/Flood | 19 | 1996-2019 | \$6,316 | 0 | 0 | 0.82 |

The table below summarizes the 19 flood events occurring in the City of Laurel in the last 23 years.

Flood Events, City of Laurel, 1996 – 2019

| Location or County | Date | Time | Type | Dth | Inj |
|------------------------|------------|------|-------------|-----|-----|
| Prince George's County | 8/26/1999 | 1700 | Flash Flood | 0 | 0 |
| Prince George's County | 9/9/1999 | 2000 | Heavy Rain | 0 | 0 |
| Prince George's County | 9/16/1999 | 800 | Flash Flood | 0 | 0 |
| Prince George's County | 9/16/1999 | 800 | Flash Flood | 0 | 0 |
| Prince George's County | 9/2/2000 | 1400 | Heavy Rain | 0 | 0 |
| Prince George's County | 9/3/2000 | 1400 | Heavy Rain | 0 | 0 |
| Prince George's County | 9/24/2000 | 1200 | Heavy Rain | 0 | 0 |
| Prince George's County | 12/16/2000 | 2100 | Heavy Rain | 0 | 0 |
| Prince George's County | 6/7/2001 | 230 | Heavy Rain | 0 | 0 |
| Prince George's County | 6/21/2001 | 1630 | Heavy Rain | 0 | 0 |
| Prince George's County | 6/7/2003 | 600 | Heavy Rain | 0 | 0 |
| Prince George's County | 6/19/2003 | 1900 | Heavy Rain | 0 | 0 |
| Prince George's County | 7/22/2003 | 1800 | Heavy Rain | 0 | 0 |
| Prince George's County | 12/11/2003 | 700 | Flood | 0 | 0 |
| Prince George's County | 7/8/2005 | 900 | Heavy Rain | 0 | 0 |
| Prince George's County | 6/26/2006 | 1830 | Flash Flood | 0 | 0 |
| Prince George's County | 7/6/2006 | 32 | Flash Flood | 0 | 0 |
| Prince George's County | 8/12/2014 | 1145 | Flash Flood | 0 | 0 |
| Prince George's County | 5/19/2015 | 40 | Flood | 0 | 0 |

4.3.3 Flood Risk Assessment

The City of Laurel's vulnerability and risk from the flood hazard is analyzed and assessed in the Prince George's County & City of Laurel Hazard Mitigation Plan Update in Section 4.5.1 using the *Total Exposure in Floodplain (TEIF) Methodology*. This analysis identified many areas within the City of Laurel that may be at risk to flood and demonstrated that the City accounted for more than 12% of the County's property value exposure to the risk of floods.

The FPPC, through this Flood Hazard Addendum planning process, further assessed the City's risk from the flood hazard by analyzing the vulnerability of critical facilities within the City of Laurel. Of the data gathered about these facilities, the factors directly affecting the facility's susceptibility to damage and/or loss from flooding are the building's construction date and flood zone. Critical facilities constructed prior to 1976 were built before the first Flood Insurance Rate Map (pre-FIRM) and therefore were not designed with flood protection in mind. This leaves those structures more vulnerable to future flooding than those constructed post-FIRM which increases the risk of future damage. The designated flood zone in which each facility lies also greatly affects the likelihood that flooding will occur at that location. The table below summarizes the flood event vulnerability of critical facilities in the City of Laurel, in order of greatest risk.

City of Laurel Critical Facilities Flood Vulnerability Assessment

| Name of Facility | Purpose | Address | Year Built | Effective Zone | Zone Risk | Pre/Post Firm Risk | FLOOD RISK |
|--|---------|-----------------------|------------|----------------|-----------|--------------------|------------|
| Laurel Volunteer Rescue Squad | P | 14910 Bowie Rd. | 1952 | AE-EL 142 | 2 | 3 | High |
| Laurel Police Department | P | 811 Fifth St. | 1988 | AE-EL 165 | 2 | 2 | Moderate |
| City Hall Municipal Center | A | 8103 Sandy Spring Rd. | 1945 | X | 1 | 2 | Moderate |
| Department of Parks and Recreation Operations | A,P | 7705 Sandy Spring Rd. | 1962 | X | 1 | 2 | Moderate |
| Laurel Armory-Anderson Murphy Community Center | R | 422 Montgomery St. | 1927 | X | 1 | 2 | Moderate |
| Laurel Elementary School | E | 516 Montgomery St. | 1973 | X | 1 | 2 | Moderate |
| Laurel High School | E | 800 Cherry Ln. | 1965 | X | 1 | 2 | Moderate |
| Laurel Volunteer Fire Department | P | 7411 Cherry Ln. | 1990 | X | 1 | 1 | Low |
| Department of Public Works | P | 305-307 First St. | 1988 | X | 1 | 1 | Low |
| Robert J. DiPietro Community Center | R | 7901 Cypress St. | 1993 | X | 1 | 1 | Low |
| Scotchtown Hills Elementary School | E | 15950 Dorset Rd. | 1980 | X | 1 | 1 | Low |

A = Administration P = Public Safety R = Recreation E = Education

The following was used to assign a level of risk to the critical facilities listed in the above table.

Zone Risk

- 1 = Structures located in an effective "X" zone
- 2 = Structures located in an effective "AE" zone

Pre/Post FIRM Risk

- 1 = Structures built after 1975 and located in an effective "X" zone
- 2 = Structures built after 1975 and located in an effective "AE" zone; or
Structures built prior to 1976 and located in an effective "X" zone

Those levels of risk were combined to assign an overall flood risk to each critical facility as described below:

FLOOD RISK

- Low - (1 - 2) These structures were built after the development of community Flood Insurance Rate Maps and were therefore designed with flood protection in mind. They are also located in an effected "X" zone which further reduces the likelihood of future damage/loss.

- Moderate - (3 - 4) These structures are at an increased level of risk due to their combined Zone and Pre/Post Firm Risk. Those built post-FIRM are located in an effective "AE" zone which puts them at a higher risk, and those located in an effective "X" zone were built pre-FIRM and are at an equally elevated risk.

- High - (5 - 6) These structures are the most vulnerable of those inventoried and carry the greatest damage/loss risk from future flood events. They are all located within an effective "AE" zone which in itself poses a larger flood threat. Structures given a "High" level of risk were constructed pre-FIRM and are located in an effective "AE" zone.

Of the 11 public facilities assessed, 7 are at a Moderate to High risk to a future 100-year Flood Event as assessed through comparison with the 2016 FIRM data and structure construction date

Section 5 Flood Mitigation Goals, Objectives, Strategies and Actions

During the Flood Hazard Addendum planning process, the FPPC met several times to discuss the goals, objectives, strategies, and actions that would best meet the flood planning needs of the City of Laurel. Committee members participated in round-table discussions and table-top exercises where potential goals were vetted, and flood mitigation actions were derived and prioritized. The goals, objectives, strategies and actions below were all derived as a direct result of these FPPC meetings.

5.1 Flood Mitigation Goals

Goals are general descriptions of desired long-term outcomes. State and federal guidance and regulations pertaining to mitigation planning require the development of mitigation goals to reduce or avoid long-term vulnerabilities to identified hazards. Mitigation goals have been established by FEMA, the State of Louisiana, Prince George's County, and the City of Laurel.

The goals identified in the Hazard Mitigation plan are:

It is the goal of Prince George's County and the City of Laurel, Maryland, to protect and improve the public health, safety, and welfare of its communities, and to expand the resiliency of livable communities by:

- Increasing public awareness of natural hazards and risk reduction measures; and
- Mitigating risks due to natural hazards.

The Flood Prevention Planning Committee expanded on the overall plan goal by creating the below 4 goals specific for flood risk reduction. A list of mitigation goals at a meeting held on November 14, 2019. The goals were determined to be those that would have the greatest benefit in flood hazard reduction to the City of Laurel. The committee established four goals with action items listed in each goal.

1. Enhance public awareness and understanding of preparedness and risks through education and emergency notification programs
2. Identify and pursue protective measures that will benefit the built environment and natural systems
3. Facilitate sound development in the City through local plans and regulations to reduce or eliminate the potential impact of flooding
4. Invest in structural and green infrastructure projects to manage future risk

5.2 Flood Mitigation Objectives

Objectives are well-defined intermediate points in the process of achieving goals. City of Laurel flood mitigation planning objectives include:

1. Reduce the exposure of residential areas to flooding.
2. Ensure that City critical facilities remain functional during flood hazard events.
3. Find and develop opportunities to work with other agencies to leverage mitigation funds, and to share information about the risks of flooding hazards.
4. Improve the early warning and Public Alert System for flood hazards to save lives and reduce damages to property.
5. Promote partnerships among Federal, State, County, and City Governments to identify, prioritize and implement flood mitigation actions.

6. Participate in the CRS program through the NFIP to allow citizens to purchase flood insurance at a discounted price.
7. Maintain the viability of City of Laurel businesses by preventing damages from flood hazards.
8. Ensure that the City maximizes its opportunities for access to Federal and State grants and other kinds of assistance.
9. Provide effective implementation of existing floodplain regulations and building codes.
10. Ensure that the City continues to be represented in the determination of region-wide flood mitigation actions.
11. Stay involved with citizen and technical groups concerning measures related to flood hazard mitigation.

5.3 Flood Mitigation Strategies

Strategies are specific course of action to achieve the objectives. City of Laurel mitigation planning strategies include:

1. Maintain awareness of the potential effects of flood hazards on City of Laurel assets. Use new information from flood events to increase local knowledge of risks.
2. Undertake vulnerability and risk studies to better understand the potential for future damages.
3. Ensure the City Emergency Operations Plan is maintained and updated and enhance Public Alert System.
4. Implement cost-effective projects and actions to reduce risk from flood hazards, both for City assets and operations, as well as for residents and businesses in the planning area.
5. Install emergency backup generators at all critical facilities.
6. Distribute information to the public concerning the hazards associated with flooding. Include with the material opportunities about mitigation measures that can reduce flooding.
7. Monitor mitigation measures to ensure they are functioning efficiently.
8. Promote the purchase of flood insurance.
9. Continuously monitor this Flood Hazard Addendum to ensure that it remains current with regard to risks, strategies, priorities and mitigation actions.
10. Promote public understanding, support and demand for hazard mitigation.
11. Pursue drainage projects that will reduce local flooding in the City.
12. Seek Federal and State grants to fund mitigation activities.
13. Encourage and facilitate the development or updating of General Plans, Drainage Plans, Land and Zoning, Building Construction, and Floodplain Management Ordinances to limit development in flood hazard areas.

5.4 Prioritized Flood Mitigation Actions

The table below outlines mitigation actions that have been identified by the FPPC. The actions are prioritized and give implementation information, including: Person/Agency responsible, potential funding sources, and the anticipated year of completion. This information further identifies how City of Laurel could potentially implement these actions should funding become available.

| Primary Mitigation Project Type | Description | Prioritization | Responsible Coordinating Entity | Potential Funding Agency | Anticipated Year of Completion |
|---------------------------------|--|----------------|--|--------------------------|--------------------------------|
| Prevention | Partner with FEMA/MDE to promote the use of Updated Flood Hazard Maps. | Medium - High | Emergency Manager; Dept of Economic Development | FEMA; HUD; NRCS; EPA | 2025 |
| Prevention | Integrate mitigation plan requirements and actions into other appropriate planning mechanisms such as: comprehensive plans, capital improvement plans, and master plans | Medium - High | Emergency Manager; Dept of Economic Development | FEMA; HUD; NRCS; EPA | 2022 |
| Prevention | Increase storm water protection management including retention and detention basins through partnership with Prince George's County | Medium - High | Emergency Manager; Dept of Economic Development | Local | 2022 |
| Property Protection | Implement joint inspections for projects within the City by working closely with Prince George's County soil conservation district (SCD) | High | Dept of Economic Development; Soil Conservation District | Local | 2022 |
| Property Protection | Seek mitigation solutions for city facilities, including: the flood-prone municipal swimming pool; Department of Public Works flood-prone buildings; and the City of Laurel Police Department building | High | Emergency Manager; Department of Economic & Community Development; Department of Public Works, Laurel Police Department, Department of Recreation. | FEMA; HUD; NRCS; EPA | 2025 |
| Property Protection | Support mitigation projects that will result in protection of public or private property and historic properties/districts from natural hazards, such as: acquisition of flood-prone property; elevation of flood-prone structures; minor structural flood control projects; relocation of structures from flood prone areas; stormwater management improvements; and advanced warning systems and hazard gauging systems. | High | Emergency Manager; Dept of Economic Development | FEMA; HUD; NRCS; EPA | 2025 |
| Property Protection | Join the FEMA Community Rating System to reduce the cost of NFIP policy premiums | Medium - High | Emergency Manager; Dept of Economic Development | FEMA; ISO | 2021 |
| Property Protection | Encourage the purchase of flood insurance | Medium | Emergency Manager; CERT volunteers; PIO | Local | ongoing |

| Primary Mitigation Project Type | Description | Prioritization | Responsible Coordinating Entity | Potential Funding Agency | Anticipated Year of Completion |
|--|--|-----------------------|--|---------------------------------|---------------------------------------|
| Structural | Analyze the structural integrity of dams within the City (both natural and man-made), evaluate their upstream and downstream impacts, and assess each for potential measures that could reduce flood risk | High | Emergency Manager; Parks & Rec; Economic Development; Public Works | Local | 2025 |
| Education & Awareness | Implement a flood warning system with gages that allows for alert/notification to those in the flood threat area | High | Emergency Manager | FEMA; HUD; NRCS; EPA | 2025 |
| Education & Awareness | Hold outreach meetings to inform City residents of the plan for evacuation during a flood | High | Emergency Manager; CERT volunteers; PIO | Local | 2021 |
| Education & Awareness | Educate public on the negative effects of dumping waste and not cleaning catch basins, and enforce penalties for violations | High-Medium | Emergency Manager; CERT volunteers; PIO | Local | 2022 |
| Education & Awareness | Continue outreach efforts to promote recently completed bi-lingual Citizens Emergency Preparedness Guide | High-Medium | Emergency Manager; CERT volunteers; PIO | FEMA; HUD; Local | 2022 |
| Education & Awareness | Provide preparedness education to residents in flood-prone areas, including tenants occupying rental property | High-Medium | Emergency Manager; CERT volunteers; PIO | FEMA; HUD; Local | 2022 |
| Education & Awareness | Continue to build, improve, and maintain a phone/text/ e-mail/social media emergency notification warning system | Medium | Emergency Manager; CERT volunteers; PIO | FEMA; HUD; Local | 2023 |
| Education & Awareness | Establish an education and outreach program to children/youth within schools, libraries, and other community avenues | Medium | Emergency Manager; CERT volunteers; PIO | FEMA; HUD; Local | 2023 |
| Emergency Services | Develop and implement a flood evacuation plan | High | Emergency Manager | FEMA; HUD; Local | 2021 |
| Emergency Services | Test and exercise the new notification procedures within the City of Laurel and Prince George's County to identify any shortfalls or procedures that need to be amended - expanded floodplain areas must be addressed in relationship to areas affected by a release of water from | High | Emergency Manager | Local | 2021 |

| Primary Mitigation Project Type | Description | Prioritization | Responsible Coordinating Entity | Potential Funding Agency | Anticipated Year of Completion |
|---------------------------------|---|----------------|--|----------------------------------|--------------------------------|
| Emergency Services | Provide flood response training to emergency personnel and include response agencies across City boundaries for continuity of operations | High-Medium | Emergency Manager | FEMA; Local | 2022 |
| Emergency Services | Hold periodic drills/exercises for flash flood response, nuisance flooding, and dam failure – include response agencies across City boundaries for continuity of operations | High-Medium | Emergency Manager | FEMA; Local | 2022 |
| Emergency Services | Purchase specialized equipment for flood rescue and response, including that which is needed for swift-water rescue | High-Medium | Emergency Manager | FEMA; HUD; Local | 2022 |
| Natural Resources Protection | Implement protection measures that extend across City boundaries including retention and detention basins | High | Emergency Manager; Parks & Rec; Economic Development; Public Works | FEMA; HUD; County; Local | 2024 |
| Natural Resources Protection | River/Stream/Bank Restoration | High | Emergency Manager; Parks & Rec; Economic Development; Public Works | FEMA; HUD; County; Local | 2025 |
| Natural Resources Protection | Implement green infrastructure mechanisms to improve water quality, increase canopy coverage, and aid in erosion prevention | High-Medium | Emergency Manager; Parks & Rec; Economic Development; Public Works | FEMA; HUD; County; Local | 2025 |
| Natural Resources Protection | Enhance and enforce wetland preservation and restoration | High-Medium | Emergency Manager; Parks & Rec; Economic Development; Public Works | FEMA; HUD; County; Local | 2024 |
| Natural Resources Protection | Develop a comprehensive watershed management plan and program | Medium - High | Emergency Manager; Parks & Rec; Economic Development; Public Works | FEMA; HUD; Silver Jackets; Local | 2024 |
| Natural Resources Protection | Implement an Adopt-A-Stream program | Medium | Emergency Manager; Parks & Rec; Economic Development; Public Works | Local | 2025 |

Section 6 Flood Hazard Addendum Monitoring, Evaluation and Maintenance

6.1 Method for Monitoring the Flood Addendum

This Plan will be monitored by the City of Laurel Administrator's Office for several related purposes:

1. Maintain the currency of flood hazard and risk information.
2. Ensure that flood mitigation projects and actions reflect the priorities of the City of Laurel and the Flood Prevention Planning Committee.
3. To comply with FEMA and State of Maryland requirements for plan maintenance, and maintain the City of Laurel's eligibility for federal disaster assistance and mitigation grants.

Through the flood mitigation planning process, the FPPC considered a range of flood mitigation actions. These actions were identified and prioritized and are shown in Section 5. Each action is assigned a lead agency; each agency is responsible for factoring the action into its work plan and schedule over the indicated time period.

6.2 Method and Schedule for Evaluating and Updating the Flood Addendum

The City of Laurel Administrator's Office will coordinate an annual meeting of the Flood Prevention Planning Committee and assemble an annual report to the Maryland Emergency Management Agency and FEMA Region III detailing annual progress on mitigation actions as well as outreach activities.

The City Administrator's Office will compile an annual report to document progress on the mitigation actions. To monitor progress, a meeting may be convened of the lead agencies to discuss and determine progress, and to identify obstacles to progress, if any. Should the City determine during this annual process that the FPPC should be reconvened for discussion, the following criteria would be used to make that determination:

- Are there any changes in mitigation plan requirements for funding programs?
- Are any changes or revisions required to the Mitigation Action Items? (i.e. Have any action items been completed? Have any new specific flood mitigation action items been identified?)
- Does a review of the annual report indicate any changes are necessary?
- Are there any changes within the Flood Prevention Planning Committee?

In addition to the scheduled reports, comprehensive review and revisions to this Flood Hazard Addendum will be undertaken on the required five-year cycle. The Prince George's County & the City of Laurel Hazard Mitigation Plan Update was approved by FEMA in 2017, and thus must undergo a formal FEMA-complaint update by 2022. If a disaster occurs, or as action items are completed, the Addendum may be reviewed, revised, and updated sooner than the required five years.

The FPPC will be reconvened approximately one year before the five-year deadline described above and begin evaluating the Flood Hazard Addendum. The above criteria and the key topics and questions below will be addressed at the meeting:

- Has a flood event occurred since the last plan update?
- Are additional flood maps or new flood studies available?
- Has the probability of future flood events changed?
- Have recent and future developments in the City been checked for their effect on the flood hazard area?
- Have inventories of existing structures in hazard areas been updated?

- Are there any new high-risk populations?
- Have flood losses been updated to account for recent changes?

If the answer to any of the above questions is “Yes”, then the Flood Hazard Addendum will be updated accordingly. The FPPC will review each goal and action to determine its relevance to changing situations in the City, as well as changes to County, State, or Federal policy, and to ensure that they are addressing current and expected conditions. The FPPC will also review the risk assessment section and determine if this information needs to be updated or modified. If no changes are necessary, a justification for this determination will be provided.

All necessary revisions will be completed at least three months prior to the end of the five year period to allow the City Administrator’s Office time to review the updated addendum. After the update is completed, the final Flood Hazard Addendum will be submitted to MEMA for review and comment. After any MEMA revisions are implemented, the addendum will be forwarded to FEMA for review and subsequent approval.

6.3 *Continued Public Involvement*

As noted above, this addendum will be evaluated and updated on approximately an annual basis, and when certain triggering events occur. Regardless of the reason for the evaluation and update, the City of Laurel will publish a notice at least two weeks in advance of all public meetings in which the addendum or elements of the addendum are to be discussed. Those who opt to participate in this process will have an opportunity to express their concerns, opinions, or ideas about the addendum. Any public comments will be tracked by the City Administrator’s Office. All public comments will be reviewed and incorporated in the Flood Hazard Addendum at the five year update if appropriate. If an annual meeting of the FPPC is held, then public comments will be reviewed and incorporated at that time if appropriate.